

SwitchVUE Pro Software and LightMaster Panels in Networked Applications



Version 1A 5/1/05



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Introduction

The ILC LightSync SwitchVUE touch activated LCD graphical control station is designed to interface ILC LightMaster line of lighting control panels. The SwitchVUE is able to provide real time status and control of any relay, group or preset in any panel on a Standard or Extended network. With the use of the ILC LightMaster SwitchVUE Pro software you are able to configure and program the SwitchVUE interfaces. With the use of Windows Paint program or other graphics program you can create the custom background screens that depict your spaces in your facility, or use the standard screens that are provided with the software install disk. Up to 30 screens can be loaded into a standard configured unit or up to 126 with factory memory upgrades. Each screen is able to store up to 32 control objects which will give you status and control of your relays, groups and presets in your LightMaster network system.

Structure

The major components making up the Network Manager are:

- Enclosure.
- Power transformer.
- Mounting plate mud ring.
- Flush mount bezel with electronics.
- Remote power transformer mounting hardware.
- RJ45 connectors for the LightSync data line.
- Power supply.
- Power supply cable.

Enclosure – Custom enclosure is designed to mount flush with the finished wall. The enclosure includes predrilled mounting holes, knockouts and snap in mounting pins for the DC power supply.

Transformer – A 24VA multi-tap control transformer (120 or 277 / 16VAC CT) provides 16 VAC with a center tap to power the SwitchVue electronics. It contains self-resetting fuses and is UL recognized.

Mounting plate – Installed onto the flush mounted enclosure to provide a mud ring and a mount for the LCD bezel and electronics.

Bezel – The stainless steel bezel that frames the LCD touch screen and contains the electronics for the SwitchVue.

Power Transformer Mounting Hardware -

A high voltage divider is supplied for mounting the power transformer into a standard 4 11/16" electrical enclosure. This provides the isolation between the high voltage and low voltage wiring.

Transformer – A 24VA multi-tap control transformer (120 or 277 / 16VAC CT) provides 16 VAC with a center tap to power the SwitchVue electronics. It contains self-resetting fuses and is UL recognized.

Power Supply – Converts the 16 VAC CT voltage into a DC voltage that is required for the SwitchVUE. Mounts in the back of the enclosure via push-on headers. Provided with push-on connectors on the input and output.



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Section 1

Hardware Details and Installation Instructions



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Hardware Details and Installation Instructions



Objectives

This section will show the details of the hardware and the electronics of the SwitchVUE. It also provides instructions for mounting and wiring of CAT 5 and power lines.





Figure 1

1.2 Bezel Face Plate Dimension Details:



Figure 3

1.1 Mounting Plate / Mud Ring Dimension Details:



Figure 2

Hardware Details and Installation Instructions



1.3 Remote Transformer Installation:

- 1. Break off the front lip of the divider.
- 2. Punch out the center knock out on the divider.
- 3. Place into a standard 2 1/8" deep standard 4 11/16" junction box.
- 4. Mount the junction box.
- 5. Insert the nipple of the secondary side of the transformer through the knock out. Install the conduit nut on the nipple and tighten.
- 6. Connect the primary high voltage wires to 120 or 277VAC circuit.
- 7. Connect the secondary wires and pull wires out to the SwitchVue enclosure.
- 8. Cover with the appropriate plate.
- 9. See section 1.5 for more wiring details.





1.4 Installation of SwitchVUE Hardware:





1.5 CAT 5 and Power Wiring Details:

Wire from the remote mounted transformer to the SwitchVUE enclosure. Pull three 18GA wires and terminate to the power supply connector mounted in the back of the enclosure. Run CAT 5 cables from the last panel, device or PSR into the enclosure leaving six inches out of the box. Run a CAT 5 cable to the next panel, device or PSR. Terminate ends and test all cables with a CAT 5 tester prior to connecting. See Fig. 6



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Hardware Details and Installation Instructions



1.6 Installation Instructions

Choose an appropriate location on the wall approximately four to five feet off from the floor to the center of the enclosure.

- 1. Mount the enclosure to the unistrut framing being sure the face will be flush to the finished wall. See fig. 5
- 2. Mount the power transformer in a 4 11/16" electrical box using the provided high voltage divider. See fig. 4
- 3. Mount the remote transformer near the SwitchVUE location and at the appropriate electrical connection.(120 or 277VAC)
- 4. Pull the three 18 GA wires from the remote mounted transformer into the enclosure. Install the power connector at this time and energize the circuit and test the voltage. (16VAC CT) See fig. 6
- 5. Pull the CAT5 data lines from the last panel or device into the enclosure and out to the next device.
- 6. Terminate all of the CAT 5 ends and check with a CAT5 tester.

After the finishing work is complete the connection of the wiring and installation can be completed as follows:

- Mount the mounting plate (fig. 2) onto the enclosure using the four screws provided. The provided screws MUST be used for this installation. Contact ILC for replacements if necessary.
- 2. Unwrap the SwitchVUE and set the address and jumper setting on the unit. See fig. 6
- 3. Plug the CAT5 connectors in to the appropriate connectors. See fig. 6
- 4. Verify that the power is off on the remote transformer and connect the ribbon cable power connector onto the SwitchVUE.
- 5. Mount the bezel and electronics onto the mounting plate by hooking the top of the bezel onto the mounting plate and line up the holes on the bottom. Install the two screws provided through the bottom of the bezel and into the mounting plate. See fig. 5
- 6. Configure as a gateway in the Master panel. See Section 4
- 7. Energize the power for the remote transformer to power up the unit.
- 8. Program unit with the SwitchVUE Pro Software. See section 3



Section 2 Program Description



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2.0 Description

ILC SwitchVUE is an object based graphical user interface to facility lighting control. Using ILC SwitchVUE Pro Software you can add objects that represent the facilities lighting loads with control and navigation buttons. You can locate these objects on graphically depicted custom screens of the facility or standard switch depicted screens.

2.1 Manual Conventions

The following conventions should be followed when reading through this manual.

- Point Position cursor over item.
- Click Click the left mouse button once.
- Right Click Click the right mouse button once.
- Double Click Click twice with the left mouse button.

2.2 Installing ILC SwitchVue Software

Minimum Computer Requirements

- IBM compatible PC
- P4 1.6 GHZ
- 1 RS232 Serial port
- CD-R Drive
- Windows2000 or XP
- 100 MB Free space
- 512 MB Ram
- SVGA Monitor 1024 x 768 recommended
- Mouse and keyboard

Recommended Installation Procedure

Place the ILC SwitchVUE Pro software program CD into the computer drive.

Start the installation by selecting RUN from the Windows start menu and run the ILC SwitchVUE setup X.XX.exe, then follow the onscreen instructions.



2.3 Creating SwitchVUE Screens

Up to 30 screens can be loaded in a standard configured SwitchVUE. Up to 126 screens may be utilized with additional factory memory upgrades.

Screens are created using Windows paint or other graphics software that can create Windows type bitmaps and must be 240 x 128 pixels in size. Only black and white can be used for the creation.

A blank screen and a library of switch screens are provided on the installation disk. ILC's applications department can create building depicted screens from your ACAD drawings of the facilities. Contact ILC for more information.

All screens must be created and copied to the Images folder in the ILC LightMaster SwitchVUE folder on your hard drive prior to any programming.

2.4 Starting ILC SwitchVUE Pro Program

- Click on the Windows Start button and go to All Programs. Click on the LightMaster SwitchVUE Pro menu and then click on the LightMaster SwitchVUE executable file.
- The program will start with the screen shown in figure 7.

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2.5 ILC SwitchVUE Pro Menu Bar

The choices on the menu bar are:

- **File** For creating new files, opening existing files, saving currently created files, saving file as another name and to Exit.
- Load Image- To load your bitmap image onto the current screen.
- **Clear Screen**-Used to clear the bitmap image and all of the data for the screen you are presently on.
- **Download** Used to download all of the screens and password to the SwitchVUE, download a single screen or the password and get password and the last touch location from the SwitchVUE.
- **Calibrate** Calibrate the touch points on the SwitchVUE.

2.6 Other Screen features and controls

- Above the menu bar contains the program name and software revision.
- The upper right hand corner has the standard windows controls for minimizing, maximizing and closing the program.
- Screen selections pull down for selecting the current screen to program.
- 32 object programming boxes for setting the required commands and actions for each screen.
- A box for adding an eight digit password number for security between screens.
- Download setting for selecting the Com port, the SwitchVUE address or node number, the amount of memory supplied in the unit (1M standard) and a selection for Standard or Expanded network.

📓 ILC LightMasterSwitchVUE PRO 🛛 Rev 1	.02
File Load Image Clear Screen Download Calib	rate
Screen 000 -	Unused
	Unused
	Unused
	Unused

Figure 8



2.7 Screen Programming Object Types

- Show Relay Status- This object will show an icon on the screen that will represent true status of a relays state on the network. 16 selectable icons are available.
- Show Group Status- This object will show an icon on the screen that will indicate the true status of a Group on the network. 16 selectable icons are available.
- Show Preset Status- This object will show an icon on the screen that will indicate the true status of a Preset on the network. 16 selectable icons are available.
- Show A Variable in Dec Format- This object will show on the screen decimal numbers for variable controls. Three font sizes and 1-3 digits are selectable.
- Show A Variable in Hex Format- This object will show on the screen hexadecimal numbers for controls. Three font sizes and 1-3 digits are selectable.
- Go to A New Screen- A touch point used for navigating from one screen to another. Password protectable.
- Turn Off A Relay- A touch point used to control a relay on the network to the "OFF" state.
- Turn ON A Relay- A touch point used to control a relay on the network to the "ON" state.

- **Toggle A Relay** A touch point used to control a relay on the network "ON" with a touch and "OFF" with another touch.
- Turn Off A Group- A touch point used to control a Group of relays on the network to the "OFF" state (Groups must be setup in the controllers).
- Turn On A Group- A touch point used to control a Group of relays on the network to the "ON" state (Groups must be setup in the controllers).
- Toggle A Group- A touch point used to control a Group of relays on the network "ON" with a touch and "OFF" with another touch (Groups must be setup in the controllers).
- Activate A Preset- A touch point that is used to activate a Preset of relays on the network (Presets must be setup in the controllers).
- Decrement A Variable- A touch point that will decrement or decrease a variable decimal or hexadecimal number.
- Increment A Variable- A touch point that will increment or increase a variable decimal or hexadecimal number.



Section 3 Programming



Programming Features – Table of Contents



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3.1 Starting a new file and saving it to the hard drive

- 1. Click on File and then New. If you are prompted to discard any changes click on yes.
- 2. Click on File and than Save As. Type in the project name or other in the file name box and then click on Save.
- 3. Next set the communication port setting that you will be using on your PC. Set the Address or node number that the SwitchVUE rotary switches are set to. See figure 9. Set the memory setting to 1M, 2M or 4M. (Standard is 1M). Set the network type as Standard or Expanded, based on the type of network the SwitchVUE is installed on. These are all located in the Download Settings box located in the lower left corner of the main program screen.
- 4. Be sure to save your programming often. To save the programming click on File then Save.



Figure 9

3.2 Adding Screens

- 1. The first screen should start with Screen 000.
- 2. Click on Load image and select your first screen from the Image folder located on the hard drive in the ILC SwitchVUE Folder.
- 3. Next click on the screen selection pull down menu and select Screen 001 and load the next screen. See Fig. 10.
- 4. Continue with the procedure above adding all of the necessary screens for the project.



Figure 10



3.3 Adding Navigation Touch Areas

Adding navigation buttons are necessary to change from one screen to another. These can be set up to navigate to a Home screen or navigate back and forth or both if desired. Note: Text is normally added to the bitmap screens stating the navigation direction.

- 1. To set up a navigation object you must be on the screen you navigating from.
- 2. Double click on an unused object box and select the object type "Go to A New Screen" This is a touch point that navigates us to another screen.
- 3. To create the area of touch activation move the cursor and point and click with the left mouse button on the upper left side of the touch area on the screen. Next move the

cursor and point and click with the right mouse button on the lower right side of the touch area on the screen. A green box will appear corresponding with these clicks. See Fig. 11 for examples.

- 4. Adjustments for each side of the box can be manually adjusted using the X and Y pull down settings in the upper right hand corner of the object window.
- 5. Set the Control to the screen that you want to navigate to.
- 6. Check the Password Protect box if a password is required to enter the screen.
- 7. Press the Close button to save the settings.
- 8. Complete the rest of the screens with the above procedures until all of the screens have navigation buttons.





3.4 Adding Relay, Group or Preset Status Objects

Status objects on the screen represent lighting loads of either a single relay, a group of relays or a preset of relays on the network. There are 16 icons available that represent lights, lighting fixtures or just an "on" and "off" text box.

- 1. From the screen that you want to add the status object, double click on an unused object box.
- 2. Select the status type needed (relay, group or preset status).
- 3. Select the Icon desired for status.

- 4. Left click on the screen where you want the upper left side of the icon to be located.
- 5. Adjustments for each side of the box can be manually adjusted using the X and Y pull down settings in the upper right hand corner of the object window.
- 6. Set the control pull down menu to the relay and node number, the Group number or the Preset number.
- 7. Press the Close button to save the settings.
- 8. Continue with the above procedure until all of the status objects have been completed.



Figure 12



3.5 Adding Variable Number Objects

Variable number objects are numerical icons that can be incremented (increased) or decremented (decreased) with the use of other objects. They are used in conjunction with control objects to turn relays, groups and presets on, off and on / off. Up to three digits can be displayed with three font sizes in a decimal or hexadecimal format.

1. From the screen that you want to add the numerical variable object double click on an unused object box.

- 2. Select either Show A Variable In Dec Format or Hex format.
- 3. Select small, medium or large font size required for this screen.
- 4. Select either one, two or three digits to be displayed.
- 5. Select a control variable from 00 to 15.
- 6. Left click on the screen where you want the upper left side of the icon to be located.





3.6 Incrementing and Decrementing a Variable

Incrementing and decrementing objects are used in conjunction with the variable numerical objects. These functions will increase or decrease the numbers displayed.

- 1. From the screen that you want to add the incrementing or decrementing object double click on an unused object box.
- 2. Select either Incrementing A Variable or Decrementing A Variable.
- 3. To create the area of touch activation move the cursor and point and click with the left mouse button on the upper left side of the touch area on the screen. Next move the cursor and point and click with the right mouse button on the lower right side of the touch area on the screen. A green box will appear corresponding with these clicks.

- 4. Adjustments for each side of the box can be manually adjusted using the X and Y pull down settings in the upper right hand corner of the object window.
- 5. Set the variable by clicking on the box in the control variable and select the one that corresponds with the number of object that you want to control
- 6. Set the minimum or maximum value needed for the object.
- 7. Press the Close button to save the settings.
- 5. Adjustments for each side of the box can be manually adjusted using the X and Y pull down settings in the upper right hand corner of the object window.
- 6. Set the control pull down menu to the relay and node number, the Group number or the Preset number.
- 7. Press the Close button to save the settings.



Programming



3.7 Using Variables to Control Single Relays, Groups or Presets

The variable numerical objects are created using the instructions in section 3.5 and 3.6 can control relays, groups or presets. There are 15 variables available for use and located in the control section for relays, groups, presets and node addresses. With one variable you can have numbers that represent each relay in a single panel and have control of each relay using one single button. (or group or preset)

 Start by creating a screen with buttons that portrays an up arrow for incrementing and a down arrow for decrementing for placement of the touch controls. Also create a screen button for placing an on, off or on and off touch point. Also add any text or buttons needed for this screen. Save the screen in the image folder.

- 2. Add the numerical variable to the screen as described in section 3.5 "Show A Variable In Dec Format". Set the variable to one of the 16 available.
- 3. Add the incrementing and decrementing touch objects over the up and down buttons created on the screen. See section 3.6 "Incrementing and Decrementing A Variable" Set to the same variable to the same number as in step 1
- 4. Add the relay control touch area over button created on the screen. See section 3.8 "Adding Relay Control Touch Areas" Set to the same variable as in step 1

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Figure 15



3.8 Adding Relay Control Touch Areas

Relay control touch areas can be set to turn any relay in the network "on", "off" or to toggle "on and off" These touch areas can be placed anywhere on the screen and multiple touch areas can be placed on top of each other if desired.

- 1. From the screen that you want to add the relay control touch object double click on an unused object box on the right of the screen.
- 2. Select the action that you want for the relay control. Turn off a relay, turn on a relay or toggle a relay.
- 3. To create the area of touch activation move the cursor and point and click with the left mouse button on the upper left side of the touch area on the screen. Next move the

cursor and point and click with the right mouse button on the lower right side of the touch area on the screen. A green box will appear corresponding with these clicks.

- 4. Adjustments for each side of the box can be manually adjusted using the X and Y pull down settings in the upper right hand corner of the object window.
- 5. In the control section select the Node where the relay is located. (this is the address of the LightMaster panel)
- 6. In the same control section select the relay to be controlled.
- 7. Press the Close button to save the settings.
- 8. Continue with the above procedure until all of the relay control touch objects have been completed.



Programming



3.9 Adding Group Control Touch Areas

Group control touch areas can be set to turn any group of relays in the network "on", "off" or toggle "on and off". (Groups must be programmed into the panels) These touch areas can be placed anywhere on the screen and multiple touch areas can be placed on top of each other if desired

- 1. From the screen that you want to add the group control touch object double click on an unused object box on the right of the screen.
- 2. Select the action that you want for the group control. Turn off a group, turn on a group or toggle a group.
- 3. To create the area of touch activation move

the cursor and point and click with the left mouse button on the upper left side of the touch area on the screen. Next move the cursor and point and click with the right mouse button on the lower right side of the touch area on the screen. A green box will appear corresponding with these clicks.

- 4. Adjustments for each side of the box can be manually adjusted using the X and Y pull down settings in the upper right hand corner of the object window.
- 5. In the control section select the group to be controlled.
- 6. Press the Close button to save the settings.
- 7. Continue with the above procedure until all of the group control touch objects have been completed.

ILC LightMasterSwitch/UE PRO Rev 1.	97			
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	Goto A New Screen Tun OH A Belop Tun OH A Belop Toggie A Relay Tun OH A Belop Tun OH A Broop Toggie A Broop Toggie A Broop Activate A Preset Decrement A Variable Incomment A Variable			
Password -				
COMT y Node 00 y 11 Mb y © Standard Network C Expanded Network				

Figure 17



3.10 Adding A Preset Control Touch Area

Preset control touch areas can be set to activate a preset of relays anywhere on the network. (Presets must be programmed into the panels) These touch areas can be placed anywhere on the screen and multiple touch areas can be placed on top of each other if desired.

- From the screen that you want to add the control touch object to activate a preset double click on an unused object box on the right of the screen.
- 2. Select the Activate A Preset object type.
- 3. To create the area of touch activation move the cursor and point and click with the left mouse button on the upper left side of the

touch area on the screen. Next move the cursor and point and click with the right mouse button on the lower right side of the touch area on the screen. A green box will appear corresponding with these clicks.

- 4. Adjustments for each side of the box can be manually adjusted using the X and Y pull down settings in the upper right hand corner of the object window.
- 5. In the control section select the preset to be controlled.
- 6. Press the Close button to save the settings.
- 7. Continue with the above procedure until all of the control touch objects to activate a preset have been completed.



Figure 18

Programming



3.11 Programming a Variable to Control to Work with another Variable

This example will be able to control relays 1-48 in nodes 1, 2 and 3 using a single button. You will program a numerical variable to control the node number and one to control the relay number. Both will have incrementing and decrementing buttons and buttons to change the node and toggle the individual relay in each panel.

- 1. Create a screen with incrementing and decrementing buttons for both nodes and relays. See below.
- 2. Add the object "Show A Variable In A Dec" and set the Control to Variable 00 and position it onto the screen. This will be used for the relay number. Place in the position desired for viewing the relay number.
- 3. Add the object "Increment A Variable" and set the touch box over the up arrow for the relay number. Set the Control Variable to 00. Set the Maximum value to 48.
- 4. Add the object "Decrement A Variable" and set the touch box over the up arrow for the

relay number. Set the Control Variable to 00. Set the minimum value to 1.

- 5. Add the object "Toggle A Relay" and set the touch box over relay control button on the screen. Set the Control to Relay Variable 00, Node 1.
- 6. Add the object "Show A Variable In A Dec" and set the Control to variable 01 and position it onto the screen. This will be used for the node number. Place in the position desired for viewing the node number.
- 7. Add the object "Increment A Variable" and set the touch box over the up arrow for the node number. Set the Control Variable to 01. Set the maximum value to 3.
- 8. Add the object "Decrement A Variable" and set the touch box over the up arrow for the node number. Set the Control Variable to 01. Set the minimum value to 1.
- 9. Add the object "Toggle A Relay" and set the touch box over node control button on the screen. Set the Control to Relay: Variable 00 and Node: Variable 01.

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	Dec Variable - Var03 Min Value-003	
	Toggle Relay - Relay: Var00 Node:01	
5 -	Show Variable In Dec Format-Var01	
00	IncVariable-Var01 MaxValue=002	
	Dec Variable - Var01 Min Value=001	
NODE RELAY RECT	Toggle Relay-Relay/Ver00_Node/Ver01	
Prome	Unused	
	Unused	
Pazzword	Unused	
	Unused	
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Section 4 Downloading Screens and Calibrating Touch Control





Section 4 Downloading Screens and Calibrating Touch Control

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4.0 Setting up the SwitchVUE on the Network

- Standard Network- from the ILC LightMaster Pro SNET software or from the Master panel keypad click on the edit button and scroll down to Edit System. Go into Configure Nodes. Select the node address that the SwitchVUE is set at. Configure as a Gateway.
- Expanded network from the ILC LightMaster Pro ENET software go into Configure Nodes. Select the node address that the SwitchVUE is set at. Configure as a Gateway.

4.1 Downloading programming

Downloading gives you the capability of sending the screens and programming down to the SwitchVue unit. It also provides a means to download only one screen or just the password. All downloads are sent through the Master panel or the Network Manager out across the CAT 5 network and into the SwitchVUE.

 Connect to the Master panel on a Standard Network or Network Manager on an Expanded Network. Use a straight through RS232 cable and connect to the RS232 communications port located in the lower left corner of the processor board to the communications port of your computer. See Fig.20.



- 2. Start the ILC LightMaster SwitchVUE Pro software program.
- 3. Open the file that you want downloaded to the SwitchVUE.
- 4. Verify the Download Settings. Incorrect settings will not download properly.
- 5. From the menu bar select Download and than click on "Download all screens and Password". This will download all of the settings including screens, programming and password. You can select also to only download the screen that you are presently at by selecting "Download This Screen". Note: The download window must remain open during the download. Do not switch to another application during the download. Do not exceed the limit of screens for the memory supplied in the SwitchVue.





4.2 Upload the Password and Show the Last Touch Point

1. After connecting to the SwitchVUE from the menu bar select download and click on "Get Password and Touch from Operator Interface". A window will come up with the password and an X and Y location of the last area touched on the screen.

4.3 Calibrating the Touch Control Areas.

The SwitchVUE units touch areas are calibrated at the factory. This is designed to give you the ability to fine adjust it if necessary.

- 1. After connecting to the SwitchVue from the menu bar select "Calibrate".
- 2. The calibrate screen window will come up.
- 3. Using your finger or a stylus, press the centers of the cross lines.
- 4. Adjust the touch area left or right and up and down until it centers onto the cross lines. The X and Y coordinates are shown in the lower left hand corner and should be referenced when adjusting. The calibration diamond on the screen only updates the new settings when retouched.
- 5. Default setting can be set by pressing the button on the upper right hand area of the calibrate touch screen window.



Figure 22